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10/502,185	07/21/2004	Sung-Cheol Yoon	HNG0004US	5544

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Hartford, CT 06103

EXAMINER
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CHEUNG, WILLIAM K

ART UNIT	PAPER NUMBER
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1796

NOTIFICATION DATE	DELIVERY MODE
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07/10/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/502,185	<b>Applicant(s)</b> YOON ET AL.	
	<b>Examiner</b> WILLIAM K. CHEUNG	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,6,8,10-13,16-19,25-28,35-39,41 and 42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6,8,10-13,16-19,25-28,35-39,41 and 42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. In view of the amendment filed March 18, 2009, claims 2-5, 7, 9, 14, 15, 20-24, 29-34, 40 have been cancelled. Claims 1, 6, 8, 10-13, 16-19, 25-28, 35-39, 41, 42 are pending.

#### ***Claim Rejections - 35 USC § 112***

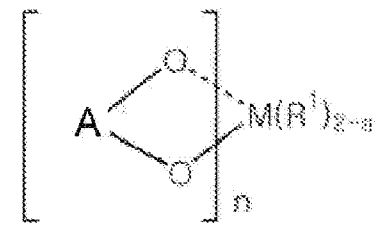
2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 6, 8, 10-13, 16-19, 25-28, 35-39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 (line 21), the recited chemical structure is not supported by the original specification.

Chemical Formula 1



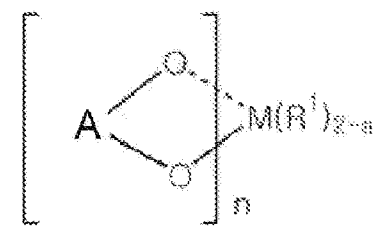
4. Claims 1, 6, 8, 10-13, 16-19, 25-28, 35-39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It seems that the precatalysts of claim 25 require the A-O bond that connects to the M via a dative bond to be a double bond. How is A-O bond that connects to the M via a dative bond to be a single bond?

Applicant's arguments filed March 18, 2009 have been fully considered but they are not persuasive. Applicants argue that the species recited in claim 25 adequately provide the support for the claimed "Chemical Formula 1" of claim 1, which is a genus to the species of claim 25. However, the examiner disagrees because the specification fails to provide support for the broadening of the claimed scope by claiming the genus, which is not supported by the original specification. Regarding applicants' argument that an A-O bond generically include an A=O bond, the examiner disagrees. Applicants must recognize that there is not specific direction from applicants' specification to indicate

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that the claimed "Chemical Formula 1" includes the species of claim 25, which are Pd(acetyl acetonate)<sub>2</sub>, Pd(acetate)<sub>2</sub>, and (acetate)Pd(acetyl acetonate). Applicants must recognize that the claimed "A" represents a linear or branched ... alkylene...". There is not an indication the "A" is part of a carboxyl group.

Chemical Formula 1



### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

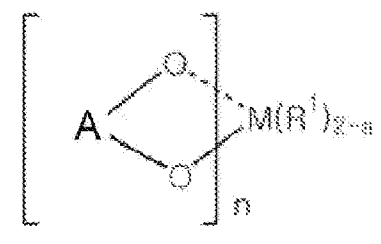
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 (line 2-4), the recitation of the precatalysts within the Markush group are considered indefinite because the recited Chemical Formula 1 does not support the precatalyst cited in claim 25.

Applicant's arguments filed March 18, 2009 have been fully considered but they are not persuasive. Applicants argue that the species recited in claim 25 adequately provide the support for the claimed "Chemical Formula 1" of claim 1, which is a genus to the species of claim 25. However, the examiner disagrees because the specification fails to provide support for the broadening of the claimed scope by claiming the genus, which is not supported by the original specification. Regarding applicants' argument that an A-O bond generically include an A=O bond, the examiner disagrees. Applicants must recognize that there is not specific direction from applicants' specification to indicate that the claimed "Chemical Formula 1" includes the species of claim 25, which are Pd(acetyl acetonate)<sub>2</sub>, Pd(acetate)<sub>2</sub>, and (acetate)Pd(acetyl acetonate). Applicants must recognize that the claimed "A" represents a linear or branched ... alkylene...". There is not an indication the "A" is part of a carboxyl group.

Chemical Formula 1



***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. Claims 1, 6, 8, 10-13, 16-19, 25-28, 35-39, 41, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipian et al. (US 6,455,650).

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1. (Previously presented) A method for preparing a cycloolefin polymer containing polar functional groups, comprising:

a) preparing a catalyst mixture including

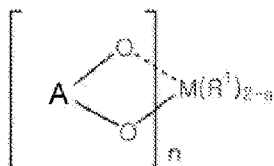
i) a precatalyst represented by Chemical Formula 1, containing a Group 10 transition metal having a ligand containing oxygen ions bonded to the metal;

ii) a first cocatalyst which is an organic compound containing a Group 15 element; and

iii) a second cocatalyst which is capable of providing an anion and weakly coordinating to the metal of the precatalyst; and

b) subjecting a monomer solution comprising a norbornene-based compound having an exo isomer content of more than 50 mol%, containing a polar functional group, and represented by the following Chemical Formula 5, to an addition polymerization reaction in the presence of an organic solvent and the catalyst mixture, at a temperature of 80-200 °C, the total amount of the organic solvent being 50-800 % by weight based on the total weight of the monomer contained in the monomer solution, and the product yield of the cycloolefin polymer being 50% by weight or more based on the total weight of the monomer wherein the polymer comprises more than 30 mol% of norbornene-based compound containing a polar functional group represented by the following Chemical Formula 5:

Chemical Formula 1



wherein

M is a Group 10 transition metal;

n is 1 or 2;

A represents a linear or branched C<sub>1-20</sub> alkylene, arylene, aralkylene, or

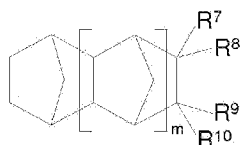


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alkenylene group or a linear or branched  $C_{1-20}$  alkylene, arylen, aralkylene, or alkenylene group containing a hetero atom including Si, Ge, S, O, or N;

$R^1$  is hydrogen; a linear or branched  $C_{1-20}$  alkyl, alkenyl or vinyl group; a  $C_{3-12}$  cycloalkyl group unsubstituted or substituted with a hydrocarbon; a  $C_{6-40}$  aryl group unsubstituted or substituted with a hydrocarbon; a  $C_{6-40}$  aryl group containing at least one hetero atom; a  $C_{7-15}$  aralkyl group unsubstituted or substituted with a hydrocarbon; or a  $C_{3-20}$  alkynyl group;

Chemical Formula 5



wherein

$m$  is an integer of 0 to 4,

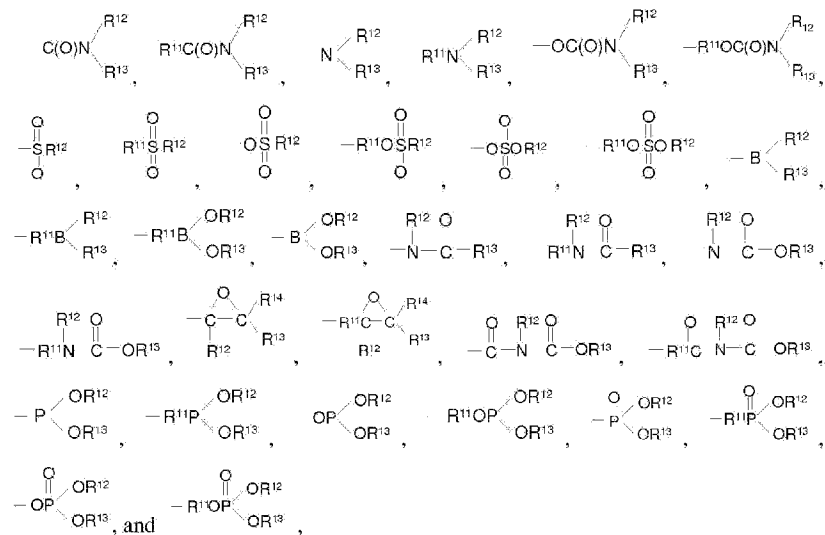
at least one of  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{10}$  is a polar functional group, the others are non-polar functional group, and  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{10}$  can be bonded together to form a saturated or unsaturated  $C_{1-20}$  cyclic group or  $C_{6-24}$  aromatic ring;

the non-polar functional group includes hydrogen; halogen; a linear or branched  $C_{1-20}$  alkyl group; a linear or branched  $C_{1-20}$  haloalkyl group; a linear or branched  $C_{1-20}$  alkenyl group; a linear or branched  $C_{1-20}$  haloalkenyl group; a linear or branched  $C_{3-20}$  alkynyl group; a linear or branched  $C_{3-20}$  haloalkynyl; a  $C_{3-12}$  cycloalkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; a  $C_{6-40}$  aryl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; and a  $C_{7-15}$  aralkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl;

the polar functional group is a non-hydrocarbonaceous polar group containing at least one of O, N, P, S, Si and B, and is selected from the group consisting of:  $OR^{12}$ ,  $OC(O)OR^{12}$ ,  $R^{11}OC(O)OR^{12}$ ,  $C(O)R^{12}$ ,  $R^{11}C(O)R^{12}$ ,  $OC(O)R^{12}$ ,  $R^{11}OC(O)R^{12}$ ,  $(R^{11}O)pOR^{12}$ ,  $(OR^{11})pOR^{12}$ ,  $C(O)OC(O)R^{12}$ ,  $R^{11}C(O)OC(O)R^{12}$ ,  $SR^{12}$ ,  $R^{11}SR^{12}$ ,  $SSR^{12}$ ,

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$R^{11}SSR^{12}$ ,  $S(=O)R^{12}$ ,  $R^{11}S(=O)R^{12}$ ,  $R^{11}C(=S)R^{12}$ ,  $R^{11}C(=S)SR^{12}$ ,  $R^{11}SO_3R^{12}$ ,  $SO_3R^{12}$ ,  
 $R^{11}N=C=S$ ,  $NCO$ ,  $R^{11}NCO$ ,  $CN$ ,  $R^{11}CN$ ,  $NNC(=S)R^{12}$ ,  $R^{11}NNC(=S)R^{12}$ ,  $NO_2$ ,  $R^{11}NO_2$ ,



in which  $R^{11}$  is a linear or branched  $C_{1-20}$  alkyl group; a linear or branched  $C_{1-20}$  haloalkyl group; a linear or branched  $C_{1-20}$  alkenyl group; a linear or branched  $C_{1-20}$  haloalkenyl group; a linear or branched  $C_{3-20}$  alkynyl group; a linear or branched  $C_{3-20}$  haloalkynyl; a  $C_{3-12}$  cycloalkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; a  $C_{6-40}$  aryl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; and a  $C_{7-15}$  aralkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl;

$R^{12}$ ,  $R^{13}$ , and  $R^{14}$  are each independently hydrogen; a halogen; a linear or branched  $C_{1-20}$  alkyl group; a linear or branched  $C_{1-20}$  haloalkyl group; a linear or branched  $C_{1-20}$  alkenyl group; a linear or branched  $C_{1-20}$  haloalkenyl group; a linear or branched  $C_{3-20}$  alkynyl group; a linear or branched  $C_{3-20}$  haloalkynyl; a  $C_{3-12}$  cycloalkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; a  $C_{6-40}$  aryl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; a  $C_{7-15}$  aralkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl,

or haloalkynyl; or alkoxy, haloalkoxy, carbonyloxy, halocarbonyloxy; and

p is an integer of 1 to 10.

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41. (Currently amended) A method for preparing a cycloolefin polymer containing polar functional groups, comprising:

a) preparing a catalyst mixture including

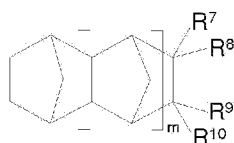
i) a precatalyst selected from the group consisting of (allyl)Pd(acetyl acetonate), ~~(allyl)Pd(acetate)~~, ~~(acetate)Pd(acetyl acetonate)~~, and a mixture thereof;

ii) a first cocatalyst which is an organic compound containing a Group 15 element; and

iii) a second cocatalyst which is capable of providing an anion and weakly coordinating to the metal of the precatalyst; and

b) subjecting a monomer solution comprising a norbornene-based compound containing a polar functional group and represented by the following Chemical Formula 5 to an addition polymerization reaction in the presence of an organic solvent and the catalyst mixture, at a temperature of 80-200 °C, the total amount of the organic solvent being 50-800 % by weight based on the total weight of the monomer contained in the monomer solution, and the product yield of the cycloolefin polymer being 50% by weight or more based on the total weight of the monomer, wherein the polymer comprises more than 20 mol% of norbornene-based compound containing a polar functional group represented by the following Chemical Formula 5:

Chemical Formula 5



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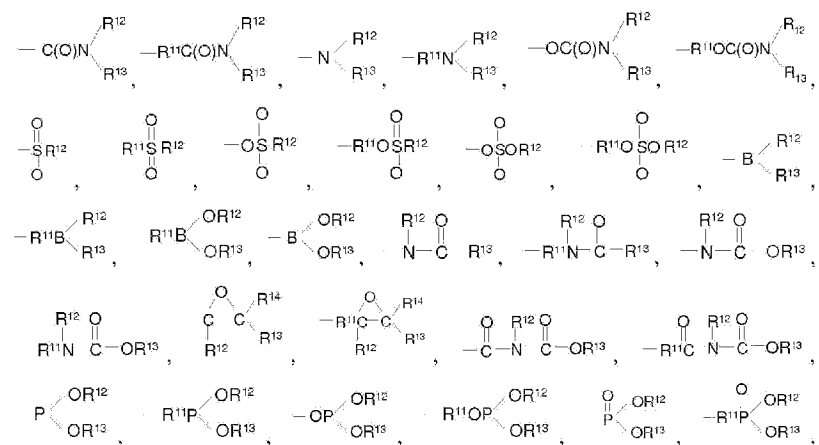
wherein

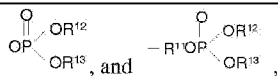
m is an integer of 0 to 4,

at least one of  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{10}$  is a polar functional group, the others are non-polar functional group, and  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{10}$  can be bonded together to form a saturated or unsaturated  $C_{1-20}$  cyclic group or  $C_{6-24}$  aromatic ring;

the non-polar functional group includes hydrogen; halogen; a linear or branched  $C_{1-20}$  alkyl group; a linear or branched  $C_{1-20}$  haloalkyl group; a linear or branched  $C_{1-20}$  alkenyl group; a linear or branched  $C_{1-20}$  haloalkenyl group; a linear or branched  $C_{3-20}$  alkynyl group; a linear or branched  $C_{3-20}$  haloalkynyl; a  $C_{3-12}$  cycloalkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; a  $C_{6-40}$  aryl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; and a  $C_{7-15}$  aralkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl;

the polar functional group is a non-hydrocarbonaceous polar group containing at least one of O, N, P, S, Si and B, and is selected from the group consisting of:  $OR^{12}$ ,  $OC(O)OR^{12}$ ,  $R^{11}OC(O)OR^{12}$ ,  $C(O)R^{12}$ ,  $R^{11}C(O)R^{12}$ ,  $OC(O)R^{12}$ ,  $R^{11}OC(O)R^{12}$ ,  $(R^{11}O)pOR^{12}$ ,  $(OR^{11})pOR^{12}$ ,  $C(O)OC(O)R^{12}$ ,  $R^{11}C(O)OC(O)R^{12}$ ,  $SR^{12}$ ,  $R^{11}SR^{12}$ ,  $SSR^{12}$ ,  $R^{11}SSR^{12}$ ,  $S(=O)R^{12}$ ,  $R^{11}S(=O)R^{12}$ ,  $R^{11}C(=S)R^{12}$ ,  $R^{11}C(=S)SR^{12}$ ,  $R^{11}SO_3R^{12}$ ,  $SO_3R^{12}$ ,  $R^{11}N=C=S$ ,  $NCO$ ,  $R^{11}NCO$ ,  $CN$ ,  $R^{11}CN$ ,  $NNC(=S)R^{12}$ ,  $R^{11}NNC(=S)R^{12}$ ,  $NO_2$ ,  $R^{11}NO_2$ ,





in which  $R^{11}$  is a linear or branched  $C_{1-20}$  alkyl group; a linear or branched  $C_{1-20}$  haloalkyl group; a linear or branched  $C_{1-20}$  alkenyl group; a linear or branched  $C_{1-20}$  haloalkenyl group; a linear or branched  $C_{3-20}$  alkynyl group; a linear or branched  $C_{3-20}$  haloalkynyl; a  $C_{3-12}$  cycloalkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; a  $C_{6-40}$  aryl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; and a  $C_{7-15}$  aralkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl;

$R^{12}$ ,  $R^{13}$ , and  $R^{14}$  are each independently hydrogen; a halogen; a linear or branched  $C_{1-20}$  alkyl group; a linear or branched  $C_{1-20}$  haloalkyl group; a linear or branched  $C_{1-20}$  alkenyl group; a linear or branched  $C_{1-20}$  haloalkenyl group; a linear or branched  $C_{3-20}$  alkynyl group; a linear or branched  $C_{3-20}$  haloalkynyl; a  $C_{3-12}$  cycloalkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; a  $C_{6-40}$  aryl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; a  $C_{7-15}$  aralkyl group unsubstituted or substituted with alkyl, alkenyl, alkynyl, halogen, haloalkyl, haloalkenyl, or haloalkynyl; or alkoxy, haloalkoxy, carbonyloxy, halocarbonyloxy; and

p is an integer of 1 to 10.

Lipian et al. (col. 112-3, claims 1 and 2; col. 115-116, claims 16 and 17; col. 40, line 19-59) disclose a method for preparing a cycloolefin polymer that is substantially identical to applicants' claims 1, 6, 8, 10-13, 16-19, 23, 25-28, 35-42. Lipian et al. (col. 29, line 45 to col. 32, line 23) clearly disclose cycloolefin polymer having a structure VII (col. 30, line 12-19) having at least one polar functional group as claimed (col. 30, line 62-67).

Lipian et al. (col. 78-79, examples 160-163) clearly disclose a precatalyst comprising two different cocatalysts. Regarding claim 25, Lipian et al. (col. 21, line 16-20) clearly disclose the precatalyst as claimed. Regarding claim 26, Lipian et al. (col. 128, line 46) clearly disclose the cocatalyst as claimed. Regarding claim 27, Lipian et al.

(col. 26, line 57-59; col. 130, line 19-22) clearly disclose the cocatalyst as claimed.

Regarding claim 28, Lipian et al. (col. 30, line 62 to col. 32, line 55; particularly col. 30, line 62-67) clearly disclose monomers as claimed.

Regarding the claimed ally palladium acetate, Lipian et al. (col. 46, example 10) clearly disclose the preparation of allyl palladium acetate complexed with (tri-o-tyolylphosphine) (the first cocatalyst). Regarding the claimed second cocatalyst, Lipian et al. (col. 26, line 25-67) clearly teach the use of WCA salts.

Regarding the claimed precatalyst, Lipian et al. (col. 46, example 10; col. 127, claim 54; col. 129, claim 61) together clearly teach a precatalyst comprises platinum, acetates or acetylacetonates, and an anionic hydrocarbyl containing ligand (R'). Regarding (R'), Lipian et al. (col. 3, line 47-50) clearly indicate that the anionic hydrocarbyl containing ligand can be allylic ligands.

Lipian et al. (col. 78-79, examples 160-163) clearly disclose a precatalyst comprising two different cocatalysts. Lipian et al. (col. 21, line 16-20) clearly disclose the precatalyst as claimed. Lipian et al. (col. 128, line 46) clearly disclose the cocatalyst as claimed. Lipian et al. (col. 26, line 57-59; col. 130, line 19-22) clearly disclose the cocatalyst (dimethyl aniliniumtetrakis(pentafluorophenyl)borate as claimed. Lipian et al. (col. 30, line 62 to col. 32, line 55; particularly col. 30, line 62-67) clearly disclose monomers as claimed. Regarding the claimed "tricyclohexylphosphine", Lipian et al. (Figure 1; col. 19, line 4; col. 10, line 57) disclose the use of tricyclohexylphosphine in the disclosed catalyst system.

Regarding the claimed ally palladium acetate, Lipian et al. (col. 46, example 10) clearly disclose the preparation of allyl palladium acetate complexed with (tri-o-tyolylphosphine) (the first cocatalyst). Regarding the claimed second cocatalyst, Lipian et al. (col. 26, line 25-67) clearly teach the use of WCA salts.

Regarding the claimed solvents, Lipian et al. (col. 40, line 34-46) disclose the claimed solvents.

Regarding the claimed polymerization temperature, Lipian et al. (col. 40, line 29-33) clearly disclose the claimed temperature range.

Regarding the claimed amount of organic solvent, Lipian et al. (col. 40, line 19-29) clearly disclose the amount of solvent being claimed.

Regarding the claimed amount of catalyst to be used, Lipian et al. (col. 40, line 47-59) disclose the amount as claimed.

Regarding the claimed "cycloolefin compound containing no polar functional group", the claimed weight average molecular weights, the product yield of greater than 50%, Lipian et al. (col. 71, examples 125, 127; col. 79, example 163) clearly teach the invention include the embodiments as claimed.

In working examples of Lipian et al. (col. 49-74, examples 23-25, 28-31, 34, 37, 39, 42, 44-47, 51, 53, 58-76, 84, 88, 89, 95, 98, 102, 105, 107, 110-112, 115-117, 123-125, 129 132, 139) clearly disclose processes characterized with a product yield of greater than 50 wt% or more based on the total weight of the monomer. It would not be difficult to one of ordinary skill in art to recognize that it is desirable to obtain a process capable of producing a product yield of greater than 50 wt% or more.

In view of the reasons set forth above, although Lipian et al. do not contain a working example using the claimed catalyst for polymerizing the disclosed monomers at a product yield of greater than 50 wt%, Lipian et al. still have clearly disclosed the catalyst and the monomers as claimed.

Therefore, in view of the substantially identical catalyst and monomer disclosed in Lipian et al. and as claimed, the examiner has a reasonable basis that the claimed “product yield of greater than 50 wt%” is inherently possessed in Lipian et al. Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Further, motivated by the expectation of success that a product yield of greater than 50 wt% can be obtained as demonstrated by some of the working examples in Lipian et al. (col. 49-74, examples 23-25, 28-31, 34, 37, 39, 42, 44-47, 51, 53, 58-76, 84, 88, 89, 95, 98, 102, 105, 107, 110-112, 115-117, 123-125, 129 132, 139), it would have been obvious to one of ordinary skill in art to perform the polymerization process of Lipian et al. with the disclosed catalyst and monomers accordingly to obtain a yield of 50 wt% feature as claimed.

Regarding the claimed “norbornene-based compound having an exo isomer content of more than 50 mol%”, Lipian et al. (col. 29, line 45 to col. 32, line 23) clearly disclose cycloolefin polymer having a structure VII (col. 30, line 12-19) having at least one polar functional group as claimed (col. 30, line 62-67). The examiner believes that the claimed “exo isomer content of more than 50 mol%” is inherently possessed in



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Lipian et al. because the functionalization norbornene inherently can result isomers that are endo, exo, or the mixture thereof, depending on the reaction condition. This is because although exo is the form that is thermodynamically more stable as compared to the endo form, sometimes, the reaction can be kinetically more favorable for the formation of the endo form. Therefore, the examiner has a reasonable basis that the isomers of norbornene type materials do not necessarily in a 50/50 (endo/exo) racemic mixture form.

Regarding the precatalyst limitations of claims 41-42, Lipian et al. (col. 46, example 10; col. 127, claim 54; col. 129, claim 61) together clearly teach a precatalyst comprises platinum, acetates or acetylacetonates, and an anionic hydrocarbyl containing ligand (R'). Regarding (R'), Lipian et al. (col. 3, line 47-50) clearly indicate that the anionic hydrocarbyl containing ligand can be allylic ligands. Regarding the claimed polymerization temperature and the amount of solvent to be used in claims 41-42, Lipian et al. (col. 40, examples 17-46) clearly teach polymerization processes involving the claimed temperature range of 80-200 °C, and the claimed amount of solvent.

Regarding the Declaration filed October 19, 2007, the comparative data are not commensurate to the scope of the claims and the teachings of Lipian et al., particularly example 10 (col. 46). Therefore, the comparative data filed fails to establish the criticality of the claimed invention. Regarding the claimed "norbornene-based compound having an exo isomer content of more than 50 mol%", Lipian et al. (col. 29, line 45 to col. 32, line 23) clearly disclose cycloolefin polymer having a structure VII (col. 30, line

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12-19) having at least one polar functional group as claimed (col. 30, line 62-67). The examiner believes that the claimed "exo isomer content of more than 50 mol%" is inherently possessed in Lipian et al. because the functionalization norbornene inherently can result isomers that are endo, exo, or the mixture thereof, depending on the reaction condition. This is because although exo is the form that is thermodynamically more stable as compared to the endo form, sometimes, the reaction can be kinetically more favorable for the formation of the endo form. Therefore, the examiner has a reasonable basis that the isomers of norbornene type materials do not necessarily in a 50/50 (endo/exo) racemic mixture form.

Applicant's arguments filed March 18, 2009 have been fully considered but they are not persuasive. In view of the 112 rejection set forth, the rationale for the instant rejection is adequate.

### ***Conclusion***

9. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K. Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/William K Cheung/  
Primary Examiner, Art Unit 1796

William K. Cheung, Ph. D.  
Primary Examiner  
June 24, 2009

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